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DEPARTMENT OF COMMERCE AND LABOR

BUREAU OF THE CENSUS

E. DANA DURAND, Director

EXPLANATORY LIST

OF

DIAGRAMS

RELATING TO

DEATHS OF INFANTS

PREPARED FOR THE ANNUAL MEETING
AND EXHIBIT OF THE AMERICAN ASSO-
CIATION FOR STUDY AND PREVENTION
OF INFANT MORTALITY ∴ ∴ ∴ ∴
BALTIMORE, NOVEMBER 9 TO 11, 1910



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LETTER OF TRANSMITTAL.

DEPARTMENT OF COMMERCE AND LABOR,
BUREAU OF THE CENSUS,
Washington, D. C., November 7, 1910.

SIR: The fullest success of the movement for the prevention of infant mortality in this country can only be attained by the aid of complete statistics of infant mortality, and its causes, for the entire United States.

Registration of births is equally necessary with the registration of deaths. The diagrams will show how woefully the registration of each is neglected. Even so, however, the data presented by the Census have been largely instrumental in bringing about the movement for saving the lives of infants and children signalized by this meeting of the American Association for Study and Prevention of Infant Mortality. Work for better registration of vital statistics is work for life saving at all ages.

The diagrams, and this brief explanatory text which incorporates the headings thereof, have been prepared under the direction of Dr. Cressy L. Wilbur, chief statistician for vital statistics. The diagrams were constructed by Miss Alice C. Couffer, assisted by other clerks of the division of vital statistics.

Respectfully submitted.

E. Dana Durand

Director of the Census.

HON. CHARLES NAGEL,
Secretary of Commerce and Labor.

DESCRIPTIVE LIST OF DIAGRAMS RELATING TO DEATHS OF INFANTS.

PREPARED BY THE BUREAU OF THE CENSUS

For the Annual Meeting and Exhibit of the American Association for Study and Prevention of Infant Mortality, Baltimore, November 9 to 11, 1910.

SOURCES AND IMPORTANCE OF VITAL STATISTICS.

The extent of the effective registration of births and deaths in the United States, its growth during recent years, and the importance of such registration for all sanitary work, and especially for the prevention of infant mortality, are shown by the maps (cartograms) and statements contained in Diagrams Nos. 1 and 2.

Diagram No. 1.—MAP SHOWING PRESENT AND PROSPECTIVE REGISTRATION STATES FOR DEATHS.—Registration cities in nonregistration States. Map showing provisional birth registration area. *Not a single State, not even a single city, in the entire United States possesses COMPLETE registration of births.* Boston claims to have about the best—only 96 per cent. *The most utterly worthless registration of births among all the great cities of the entire civilized world may be claimed by the cities of Baltimore, Chicago, and New Orleans. WHY NOT BEGIN REFORM WITH BALTIMORE?*

The Value of Vital Statistics.

Dr. JOHN N. HURTY, Secretary of the Indiana State Board of Health, says that "*The accurate collection, tabulation, and analysis of records of births, stillbirths, deaths, marriages, divorces, and sickness may be said to constitute the bookkeeping of humanity. It is FUNDAMENTAL to the practical application of hygiene, to secure higher efficiency, longer duration of life, and fuller measure of happiness.*"

Surg. GEORGE B. YOUNG, of the United States Public Health and Marine-Hospital Service, says "**Vital statistics are the foundation of scientific public health work, which can not BEGIN without access to compilation of vital statistics.**" (Shall all our American work for the prevention of infant mortality be mere ineffective AMATEUR work because we are not willing to lay a sound basis of vital statistics?)

Dr. J. H. MASON KNOX, Jr., President of the American Association for Study and Prevention of Infant Mortality, says that the origin of this association was due to the examination of the statistics of deaths

of infants as presented by the Census Bulletin of Mortality Statistics for the registration area of the United States. *How much more effective in inspiring and guiding sanitary effort would be reliable statistics of infantile mortality—which can not be obtained except through state (or city) action—for the entire United States? WHY NOT BEGIN WITH BALTIMORE?*

What the Census is doing for Better Vital Statistics.

The United States Bureau of the Census—

Receives transcripts each year, month by month, from all the States and independent registration cities that possess adequate laws and *so enforce them as to make their results of value.*

Endeavors, with marked success, to promote the extension of the registration area by the passage, and enforcement, of adequate laws. (See the map at the left of this diagram.)

Cooperates with the American Public Health Association, the American Medical Association, the American Statistical Association, the *American Association for Study and Prevention of Infant Mortality*, state and county medical societies, state boards of health, committees of state legislatures, the American Federation of Labor, and every other organization or body that can be interested in this subject, *to the end that the United States may attain a complete and uniform system of registration.*

Standardizes methods of collection of data, chiefly by means of the revised United States Standard Certificates of Death and Birth, and cooperative work for uniform methods of administration, uniform tables, and by urging the yearly professional meeting of registration officials in the *Section on Vital Statistics of the American Public Health Association.*

Publishes an annual report on mortality statistics each year since 1900 (in place of the old decennial report); and for the past two years an annual bulletin of mortality statistics.

Diagram No. 2.—INCREASE IN THE NUMBER OF REGISTRATION STATES. Proportion of total population of the United States contained in the registration area 1880, 1890, 1900, and 1910. *The chief increase of the registration area for deaths has occurred since the permanent organization of the census, which permits continuous work for its extension.*

WHAT IS INFANTILE MORTALITY?

The definition of *infantile mortality* and the movement thereof for those countries for which data are available—not for the United States, because we have no adequate registration of births even in the limited “registration area” for deaths!—are shown in Diagrams Nos. 3 to 5.

Diagram No. 3.—DECREASE OF INFANTILE MORTALITY.—*Infantile mortality* is the ratio of deaths of infants under 1 year of age *per 1,000 living births*; foreign countries by five-year periods (1886-1890, 1901-1905). *No rates of infantile mortality are available because (1) there is no general registration of deaths; (2) even for areas with registration of deaths the registration of births is incomplete.*

Diagram No. 4.—DECREASE OF INFANTILE MORTALITY IN CITIES. *Infantile mortality* is the ratio of deaths of infants under 1 year of age *PER 1,000 living births*. Foreign cities by same five-year periods as for foreign countries. *Rates of infantile mortality can not be given for American cities on account of their defective registration of births.*

Diagram No. 5.—THE COURSE OF INFANTILE MORTALITY. A Century of the History of Infantile Mortality, SHOWING ALL THE DATA AVAILABLE FOR VARIOUS COUNTRIES AS COMPILED BY THE FRENCH GOVERNMENT. The foreign countries are the same as in Diagrams Nos. 3 and 4, the century being by five-year periods from 1801 to 1910 for *deaths of infants under 1 year of age (stillbirths excluded) per 1,000 living births*. [From *Statistique Générale de la France*.]

The era of modern sanitary civilization may be marked by the dates upon which various countries began to record INFANT MORTALITY. Some countries—CHINA, TURKEY, and the UNITED STATES—even yet possess NO RECORDS OF INFANT MORTALITY. Unless the American people *wake up*, China and Turkey will have satisfactory data for Infant Mortality *long before* the United States. *Why not begin with Baltimore? And Maryland?*

BIRTH RATES AND DEATH RATES IN FOREIGN COUNTRIES AND CITIES.

Infantile mortality tends to diminish more or less in accord with the general tendency to reduction of birth rates and death rates. Of course, the reduction of infantile mortality is in itself an important factor of a diminution in the death rate at all ages, and with a reduced birth rate either the mortality of infants must have decreased to the same or even greater extent or else there would have been an increase in the ratio of infantile mortality, which is not the case as shown by the preceding diagrams. The general birth rates and death rates for foreign countries and cities are presented in Diagrams Nos. 6 to 9, which are taken from the *International Statistics* published by the Registrar-General of England and Wales, a copy of whose latest annual report should be in the hands of every serious student of infant mortality. The omission of the United States from the international data for births is on account of our almost entire lack of effective birth registration.

Diagram No. 6.—WATCH THE BIRTH RATE DECREASE! THERE ARE FEWER DEATHS OF CHILDREN BECAUSE FEWER CHILDREN ARE BORN. This leads, temporarily, to a lower general death rate; later, to a higher rate *because of fewer young persons at the most healthy ages*. Moral: If fewer babies are born their lives should be more carefully guarded. *Number of births per 1,000 living population (stillbirths excluded), and per cent decrease for foreign countries by five-year periods. No birth rates are given in the tables of International Statistics for the United States. Why? Are not the births of American babies worthy of registration? Are the births of your children properly registered? Why not?*

Diagram No. 7.—DECREASE OF THE BIRTH RATE IN CITIES. Much of the reduction in the number of Deaths of Infants in cities, as for countries as a whole, is due to the diminished birth rate. *Hence the necessity for greater saving of the little infant life we are coming to have. "An infant saved is worth two infants born?" Perhaps. Not even one American city with a birth rate worthy of inclusion in the International Statistics? Not one single one! and the accurate registration of births is the absolutely necessary basis of correct data of infant mortality. Why not begin with Baltimore?*

Diagram No. 8.—DECREASE OF GENERAL DEATH RATE. The "crude" or "general" death rate has decreased in most countries having accurate registration during recent years. This decrease is associated with the reduction in *infantile mortality*. Foreign countries as in preceding diagrams. The "crude" or ordinary death rate (the term does not mean the imperfect or carelessly computed death rate; but is used in contradistinction to a death rate "corrected" for age, sex, or other distribution of population) is the *first ready means of comparison for conditions affecting mortality*. Human life, on the whole, is becoming safer all over the civilized world; and for infants as well as for all ages.

Diagram No. 9.—DECREASE OF GENERAL DEATH RATE IN CITIES. The cities of the world share in the general reduction of the death rate, and some, in recent years, have shown heretofore unexampled low rates. We have reached an era of low mortality; are the babies getting their share? Foreign countries as in preceding diagrams and *number of deaths per 1,000 living population (stillbirths excluded) by five-year periods, with per cent decrease.*

PROPORTION OF DEATHS OF INFANTS UNDER 1 YEAR AND CHILDREN UNDER 5 YEARS OF AGE TO TOTAL DEATHS.

As stated on the following diagrams (Nos. 10 and 11), this is a very unsatisfactory means of studying infant and child mortality, but it is the best we have for some purposes in the almost entire absence of

complete registration of births in the United States. (The only accepted basis of comparison is the ratio of deaths of infants under 1 year of age to total births; that is, the true *infant mortality* for infants, and a similar ratio is most useful for children under 5 years, although the specific death rate based upon population under 5 years is also of service.) The diagrams at least show what a large proportion of total deaths would be affected by efforts for the reduction of infant mortality.

Diagram No. 10.—PROPORTION OF DEATHS OF INFANTS UNDER ONE YEAR AND CHILDREN UNDER FIVE YEARS OF AGE TO TOTAL DEATHS AT ALL AGES, REGISTRATION STATES: 1909. The per cent under 1 year and under 5 years is shown for the Registration Area and Registration States, with the proportion of deaths out of every 100 deaths at all ages, as taken from bulletin of Mortality Statistics, 1909. This is a very unsatisfactory comparison, but no reliable data of *infantile mortality* are available because of the *lack of accurate registration of births*.

Diagram No. 11.—PROPORTION OF DEATHS OF INFANTS UNDER ONE YEAR AND CHILDREN UNDER FIVE YEARS OF AGE TO TOTAL DEATHS AT ALL AGES, REGISTRATION CITIES: 1909. The same data are shown for Registration Cities, 1909, as in Diagram No. 10 for States.

LIFE TABLES AND INFANT MORTALITY.

For the exact study of infant and child mortality, as for any other subject of mortality statistics, Life Tables are most essential. A great difficulty in the preparation of American Life Tables lies in the worthless registration of births even in that part of the country (55.3 per cent) now represented in the registration area for deaths. The first term of a Life Table is the *infant mortality*, or the probability of dying during the year of birth; with this wanting or based upon estimates instead of exact data, all the subsequent values of life-expectancy are affected. There is as yet no general Life Table for the United States, this country being represented in the collection of national Life Tables published by the German Government only by a table prepared by Dr. Samuel W. Abbott, former secretary of the State Board of Health for Massachusetts.

It is the task of the Census to prepare, as thoroughly as possible with the inadequate data available, Life Tables based upon the Thirteenth Census of population. In the meantime much of value may be

learned from study of the foreign Life Tables for Germany, England and Wales, France, Italy, and Sweden, the Massachusetts table, and the tentative table for native white males of the registration states as constituted in 1900. The great uniformity of the curves in essential respects and the relative (1) rates of mortality, (2) complete expectation of life, (3) and *Lebenskraft*, or life power, are given for the whole of life by single years of age, for the first ten years of life, and for the months of the first year of life with as full detail as the data permit. The relations of infant mortality to the mortality of other ages can best be appreciated by the study of such diagrams. The diagram of specific death rates (No. 20) may be examined in connection.

Diagram No. 12.—PROBABILITY OF DYING IN EACH YEAR OF AGE PER 1,000 ENTERING UPON THAT AGE. Rate of mortality (q_x) by age in completed years from birth to 100 years, for Germany (1891–1900), England and Wales (1891–1900), France (1898–1903), Massachusetts (1893–1897), Registration States, Native White (males only, 1900), Italy (1899–1902), and Sweden (1891–1900), for males and females separately. *Infant mortality.* Note how the death curve resembles an ordinary fishhook (✓). The chief point of this diagram, for the purposes of this meeting, is the BARB. *Prevention of diarrheal diseases alone would cut down the rate of infantile mortality by ONE-FOURTH.* It is the object of the AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY TO CUT OFF THE BARB OF THIS HOOK OF DEATH. High infant mortality means weakened childhood, impaired youth and middle life, and prematurely feeble old age. THE POINT OF THE BARB PERMITS THE ENTRANCE OF POISON FOR THE whole of life. The CHANCES OF LIVING ought to be greater at birth, NOT LESS, as at present, than at other periods of life until EXTREME OLD AGE.

Diagram No. 13.—PROBABILITY OF DYING IN EACH YEAR OF AGE PER 1,000 ENTERING UPON THAT AGE. **First Ten Years of Life.** Data for the same countries as in preceding diagram.

Diagram No. 14.—PROBABILITY OF DYING IN EACH Month of Age during the First Year of Life, AND IN EACH Quarter during the Second Year, PER 1,000 ENTERING UPON EACH MONTH OR QUARTER. The data are taken from *Deutsche Sterbetafeln* (German Life Tables) for the decade 1891 to 1900, *Statistik des Deutschen Reichs*, Band 200, published in 1910 by the Imperial Statistical Office. Similar tables are given for German states and cities. *No other country has yet prepared Life Tables for infant life in as full detail.*

Diagram No. 15.—COMPLETE EXPECTATION OF LIFE, AVERAGE AFTER-LIFETIME FOR EACH AGE. Years of life expected by age

in completed years from birth to 100 years. The data are for the same foreign countries as in previous diagrams. *Note how a higher expectation at birth--Sweden--corresponds to a higher expectation throughout nearly the whole of life. Longevity? The complete expectation of life from a properly constructed life table is the only reliable measure of "Longevity." Average age at death is worthless for this purpose. The construction of life tables for the United States is seriously hampered by incomplete registration of births and deaths.*

Diagram No. 16.—EXPECTATION OF LIFE, AVERAGE AFTER-LIFETIME FOR EACH AGE during the First Ten Years of Life. The data and countries are the same as in preceding diagram covering the first ten years of life.

Diagram No. 17.—EXPECTATION OF LIFE AT Each Month of the First Year of Life AND Each Quarter of the Second Year of Life. Years of future life expected for each *completed month of age* for the first year of life and for each *completed quarter* for the second year of life are shown. *Germany is the only country that has yet found it worth while to measure carefully the exact mortality and life-expectancy of infants during the first and second years of life.*

Diagram No. 18.—Lebenskraft. Lebenskraft (LIFE-POWER, LIFE FORCE, STRENGTH OF LIFE, "VITALITY") IS A TERM GIVEN SPECIAL IMPORTANCE IN THE GERMAN IMPERIAL LIFE TABLES, AND FOR WHICH WE HAVE NO COMMON ENGLISH EXPRESSION. It is the relative number of persons who live during 1 year at each age compared with the number dying during that year (taken as unity = 1). Lebenskraft per 1,000 by years of age from 0 to 100, etc., the same countries being represented as in preceding diagrams. Lebenskraft is computed in the following way: The *Number Dying* during any given year of age per 1,000 persons who enter upon that age is taken directly from the Life Table and is the same thing as the *Probability of Dying* in the year or *Rate of Mortality*, which is designated in actuarial notation by the letter q . (See other diagrams.) Therefore *Lebenskraft*, designated by the Greek letter lambda (λ), corresponds to the formula: $\lambda = \frac{1}{q} - \frac{1}{2}$. Subtraction of one-half year

is because the number dying during the year at any age (taken as unity = 1) lived, on the average, only one-half of the year of death. [From German Imperial Life Tables, published 1910.]

Diagram No. 19.—Lebenskraft. Lebenskraft OR LIFE-POWER FOR EACH OF THE First Ten Years of Life. (See explanation of term in preceding diagram.) The data are for the same countries as previously, and for years of age from 0 to 9. The Lebenskraft is pretty nearly the *reciprocal* of the *Rate of Mortality* at each age. The higher the Rate of Mortality the lower the Power of Life, as shown by the

Ratio of the Number Surviving one year to the Number Dying during the year at each age.

Diagram No. 20.—SPECIFIC DEATH RATES. DEATHS AT EACH AGE PERIOD PER 1,000 LIVING POPULATION AT THE SAME AGE PERIOD. The ages shown are from under 5 years to 75 years and over, and for foreign countries as in preceding diagrams.

THE CHIEF CAUSES OF DEATH AFFECTING INFANT AND CHILD MORTALITY.

The *relative importance* of the twenty chief causes of death at each year of life under 5, for the quinquennial period 5 to 9 years, and for the ten decades of human life from birth to the attainment of the age of 100 years, may be seen in Diagrams Nos. 21 and 22, based upon a table in the recently published bulletin of Mortality Statistics, 1909, copies of which are available for distribution at this meeting or may be obtained upon request from the Director of the Census. The two diagrams are strictly comparable, being constructed upon the same scale, and the chief causes of infant and child mortality are well shown. The titles of diseases are those of the International Classification, which has been employed by the Bureau of the Census since 1900. It should be remembered that the surfaces of the circles are proportional to deaths alone, and that the specific death rates at each period in proportion to population are not indicated. The death rates would be much higher in the latter years of life, but the relative importance of the causes in each age period would remain unchanged.

Diagram No. 21.—THE Twenty Most Important Causes of Death AT EACH YEAR OF AGE UNDER 5, AND FOR THE FIVE-YEAR PERIOD 5 TO 9, REGISTRATION AREA OF THE United States: 1909. Single years of age from 1 to 4, five-year period 5 to 9, with per cent of all known causes at each age, are shown. THE SURFACES OF THE CIRCLES ARE PROPORTIONAL TO THE TOTAL NUMBER OF DEATHS AT EACH AGE.

Diagram No. 22.—THE Twenty Most Important Causes of Death AT EACH DECADE OF HUMAN LIFE ACCORDING TO THE RETURNS FOR THE REGISTRATION AREA OF THE United States: 1909. *Per cent of all known causes at each age period.* Ten-year age periods are shown from under 10 years to 90 years and over. THE SURFACES OF THE CIRCLES ARE PROPORTIONAL TO THE TOTAL NUMBER OF DEATHS FROM KNOWN CAUSES AT EACH AGE PERIOD. (For full data see table on page 21, Bulletin of Mortality Statistics, 1909.)

Diagram No. 23.—THE Three Most Important Causes of Death DURING Each Month of the First Year of Life. COMPUTED FROM RATES OF INFANTILE MORTALITY SHOWN IN THE REGISTRAR-GENERAL'S

REPORT FOR England and Wales: 1908. (BOTH SEXES.) Infantile mortality for each month by *ages of infants under 1 year and proportion of deaths to 1,000 births* are shown. **Eight causes of death** (some of them so indefinite as to be worthless for statistical or sanitary purposes) *were responsible, in England, for about two-thirds of the total infantile mortality.* These were **Diarrheal diseases**, Premature birth, "Atrophy," "Debility," Congenital defects, *Pneumonia*, "Convulsions," *Bronchitis*, *Whooping cough*. PREVENTABLE. Nonpreventable or indefinite.

HOW PHYSICIANS REPORT CAUSES OF DEATH OF INFANTS AND CHILDREN.

Diagram No. 24 is the result of a recent compilation prepared with special reference to this meeting of the American Association for Study and Prevention of Infant Mortality for the purpose of showing the chief *terms* actually used by physicians in stating the causes of death of infants and children under 5 years of age, without the customary grouping under the *titles* of the International Classification. It would be utterly impracticable to attempt to compile separately all the individual terms employed, some of which are quite worthless as conveying any clear idea of the cause of death, or to show the thousands of combinations of terms known as "joint causes." The table, however, includes, in the limited number of causes shown, about two-thirds of the total number of deaths compiled, and indicates that the consolidation under the titles of the International Classification does not interfere, to any extent, with the satisfactory study of the causes of infant mortality. The Census is cooperating with a committee of the American Medical Association for an American Nomenclature of Diseases by which physicians may be enabled to report the causes of death of infants and children with greater precision. "Marasmus," for example, is a worthless return for statistical purposes, and has long been discarded from the best English practice.

Diagram No. 24.—**MOST IMPORTANT Terms Designating Causes of Death RETURNED FOR CHILDREN Under 5 Years of Age BASED ON SPECIAL COMPILATION OF DEATHS IN New York City, Michigan, and Pennsylvania: 1909.** [Terms representing less than 1 per cent of total deaths omitted.] Terms returned singly, in combination, and rejected, with the total number, are shown. The *red* bars show those returned singly, *red* and black those in combination, and black those rejected, out of 1,000 deaths from all causes from 10 up to 100. This diagram shows the most important individual terms (not *titles* of the International Classification) as actually used by physicians in reporting deaths

of young children. With two or more causes assigned for the same death, one cause must be preferred in compilation; hence the terms "rejected" in favor of more definite statements.

Diagram No. 25.—**MOST IMPORTANT CAUSES OF INFANT MORTALITY.** Actual deaths in the registration area of the *United States*, 1909, from all causes of death responsible for as much as 1 death in 100 at either the *First* (0-) or *Second* (1-) years of life. Causes of death by age and number of deaths from 10,000 to 30,000 are shown. The names of all preventable causes of infant mortality (wholly or in large part) are in *red*. Detailed data and percentages in Census Bulletin on Mortality Statistics, 1909.

Diagram No. 26.—**THE GREATEST FOE OF INFANT LIFE IS Diarrhea and Enteritis.** Over two-thirds of the deaths from this disease are those of *babies under 1 year*. The number of deaths during five years by calendar months for the registration area of the *United States*, 1900-1904, is shown. **Diarrhea and enteritis** (which term includes *cholera infantum*, *gastroenteritis*, *milk infection*, *intestinal toxemia*, etc.) is a seasonal disease. That is to say, *hot weather* permits *rapid putrefactive changes* in uncooled and filth-infected *food*, more especially the baby's milk. Breast-fed children largely escape.

THE MESSAGE OF VITAL STATISTICS TO THE AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY.

Begin the attack upon infant mortality with the prevention of the **DIARRHEAL DISEASES OF INFANCY**, taking precautions early in the year, **BEFORE** the onset of hot weather, that all food supplies, and especially **MILK**, that will be used by infants during the approaching hot weather of July and August, shall be kept in proper sanitary condition. The same precautions, of course, should be continued as a matter of fixed custom and habit throughout the year, but the immediate effects of reduced mortality of infant life will be gained by special vigilance **BEFORE** the period of maximum mortality from diarrheal diseases, as shown in the preceding diagram. The prevention of these diseases—which are preeminently **FILTH DISEASES**—will wipe out one-fourth of the total number of deaths of babies under 2 years of age.

It will do more than that. Many of the deaths from "convulsions," "marasmus," "congenital debility," and even "premature birth," are in reality due to diarrhea and enteritis. All preventive measures tend to diminish mortality from other causes, some of which may not seem to be closely associated with them. The prevention of all deaths from diarrheal diseases would mean more nearly the reduction of infant mortality by one-half than by one-fourth.

Other causes may be restricted, but it is not worth while to divert our most serious efforts to them **UNTIL WE HAVE CONQUERED DIARRHEA AND ENTERITIS, THE MOST DEADLY ENEMY OF INFANT LIFE.**

HOW THE CENSUS IS WORKING FOR BETTER VITAL STATISTICS.

The Bureau of the Census has been constantly laboring, since its permanent organization in 1902, for better vital statistics, which means, as a very important part thereof, *statistics of infant mortality*. Some of the means that it employs are shown in Diagram No. 27, and consist of special census pamphlets, annual bulletins, annual reports, the *Standard Birth and Death Certificates*, manuals of the International Classification of Causes of Death (one of which, now in preparation, will be distributed to every physician in the United States about December 1), and Monthly Check Lists designed to secure *exact correspondence* in the returns as compiled by the Census and by state or city offices.

Diagram No. 27.—SOME CENSUS PUBLICATIONS AND BLANKS ON VITAL STATISTICS. Census pamphlets for extension and standardization of vital statistics:

No. 100. Legislative Requirements for Registration of Vital Statistics.

No. 101. Practical Registration Methods.

No. 102. Relation of Physicians to Mortality Statistics.

No. 104. Registration of Births and Deaths.

No. 105. Statistical Treatment of Causes of Death.

No. 106. Extension of the Registration Area for Births and Deaths.

No. 107. Modes of Statement of Causes of Death and Duration of Illness upon Certificates of Death.

No. 108. Legal Importance of Registration of Births and Deaths.

No. 109. Tuberculosis in the United States.

[Other pamphlets in preparation are: *Physician's Pocket Reference to the International List of Causes of Death*; *Practical Construction and Administration of a Registration Law for Vital Statistics*; and *Uniform Tables for Vital Statistics and Methods of Statistical Work for State and City Registration Offices*.]

Manual of International Classification, 1902, and translation of Revised International Classification, 1910 (*Revised Manual in preparation*); Annual Bulletins, 1908 and 1909; Annual Reports, 1900 to 1908; Standard Birth and Death Certificates; State and City Registrar's Monthly Check Lists; *New Punch Card, with provision for ages of infants in Days and Months* (old card gives under 1 year only).

Help the movement for better vital statistics, and especially better statistics of infant mortality, in YOUR state and city.

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